Audit Report

DEFENSE DISBURSING YEAR 2000 END-TO-END TESTING

Report No. 00-006 October 12, 1999

Office of the Inspector General
Department of Defense

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Acronyms

ADS	Automated Disbursing System
DFAS	Defense Finance and Accounting Service
IPC/CDS	Integrated Paying and Collecting/Central Disbursing System
SNIPS	Standard Negotiable Items Processing System
SRD-1	Standard Finance System Redesign, Sub-System One
Y2K	Year 2000

INSPECTOR GENERAL
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October 12, 1999

MEMORANDUM FOR DIRECTOR, DEFENSE FINANCE AND ACCOUNTING SERVICE

SUBJECT: Audit Report on Defense Disbursing Year 2000 End-to-End Testing (Report No. 00- 006)

We are providing this report for information and use. This report is one in a series of reports that the Inspector General, DoD, is issuing in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor the Defense Finance and Accounting Service efforts in addressing the year 2000 computing challenge. We considered management comments on a draft of this report when preparing the final report.

Comments on the draft of this report conformed to the requirements of DoD Directive 7650.3 and left no unresolved issues; therefore, no additional comments are required.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Ms. Kimberley A. Caprio at (703) 604-9139 (DSN 664-9139) (kcaprio@dodig.osd.mil), Mr. Dennis M. Conway at (703) 604-9158 (DSN 664-9158) (dconway@dodig.osd.mil), or Ms. Jacqueline J. Vos at (703) 604-9146 (DSN 664-9146) (jvos@dodig.osd.mil). See Appendix E for the report distribution. The audit team members are listed inside the back cover.

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Report No. 00-006 **October 12, 1999**
(Project No. 9FG-9029)

Defense Disbursing
Year 2000 End-to-End Testing

Executive Summary

Introduction. This report is one in a series of reports that the Inspector General, DoD, is issuing in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts in addressing the year 2000 computer challenge. For a listing of audit projects addressing the issue, see the year 2000 web page at http://www.ignet.gov.

The purpose of end-to-end testing is to verify that the set of interrelated systems supporting an organizational function, such as disbursing, interoperates as intended during normal operating conditions. (The Defense Finance and Accounting Service organized its end-to-end testing into seven "events," one for each critical mission or business process. The disbursing process was designated as one of the seven events.) Disbursing event testing was scheduled for completion by September 15, 1999.

Objective. The overall audit objective was to evaluate the effectiveness of the planned end-to-end testing in the DoD disbursing process. Specifically, we reviewed the Defense Finance and Accounting Service year 2000 end-to-end master plan and the four disbursing-specific test plans for conducting end-to-end testing.

Results. The Defense Finance and Accounting Service Year 2000 Project Office developed a sound overall methodology for conducting end-to-end testing. Also, the disbursing event leader was aware of and actively involved in planning for end-to-end testing. However, unless rigorous testing of interfaces takes place between disbursing systems and other systems, testing disbursing as a separate event may produce inconsistent or incomplete test results because the disbursing process is an integral part of each of the other six core processes. In addition, the "DFAS [Defense Finance and Accounting Service] Headquarters Disbursing Business Area Year 2000 End-to-End Test Plan," April 19, 1999 (the Disbursing Event Plan), was deficient in describing the test procedures, processes, and resources that may be required for conducting end-to-end tests. Also, the Disbursing Event Plan did not contain a master schedule of when testing was to begin or end, or the criteria for successful completion of end-to-end testing. Further, the disbursing event system test plans lacked critical requirements for testing the disbursing event, procedures for developing test data and expected test results (a baseline), consistency in the use of test scenarios, and standardization in the selection of a test methodology.

As a result, the Disbursing Event Plan and the disbursing system test plans for end-to-end testing may not fully ensure that the processing and disbursing of payments will continue unaffected. Because some of the issues identified in this report might not be resolved before the completion of testing, DFAS needed to take additional risk mitigation measures. For details of the audit results, see the Finding section of the report.

Summary of Recommendations. We recommend that the Director, Defense Finance and Accounting Service, initiate steps to include the Standard Negotiable Items Processing System in the end-to-end testing process, whether as part of the disbursing event or another event. We also recommend that the Director, Defense Finance and Accounting Service, initiate alternative measures to mitigate the risks of disbursing systems not being able to successfully process data after the year 2000. Such alternative measures may include, for example, performing supplementary end-to-end tests of the event, using code scanners, or expanding event contingency plans.

Management Comments. Management concurred with the recommendations in the draft report and took responsive action. The Director for Information and Technology, Defense Finance and Accounting Service, stated that the Standard Negotiable Items Processing System was included in an end-to-end test. The Defense Finance and Accounting Service will code scan the disbursing systems. The expected completion date of the scanning is October 30, 1999. See the Finding section for a discussion of management comments and the Management Comments section for the complete text of the management comments.

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Background

Addressing the Year 2000 Computing Challenge. Appendix A provides the web page for the listing of audit projects that address the year-2000 (Y2K) computing challenge.

Magnitude of Audited Entity. The Defense Finance and Accounting Service (DFAS) is the principal disbursing agency for DoD and is under the direction, authority, and control of the Under Secretary of Defense (Comptroller). DFAS is responsible for the disbursing offices that make payments by U.S. Treasury check, by cash, or by electronically transferring funds. At the end of FY 1998, DFAS was processing a monthly average of 9.8 million payments to DoD personnel; 1.2 million commercial invoices; 600,000 travel vouchers or settlements; 500,000 savings bonds; and 120,000 transportation bills. The agency's monthly disbursements totaled approximately $24 billion.

For Y2K purposes, DFAS identified 45 systems[1] as "mission critical." For purposes of testing mission-critical systems for Y2K compliance, DFAS identified its business processes considered critical and developed plans to test those business processes. Critical processes are defined as those that, if not performed, would preclude or immediately impair the disbursal, pay, and accounting of Defense entitlements. Specifically, DFAS identified the following seven critical business processes: civilian pay; military, retiree, and annuitant pay; contract and vendor pay; transportation pay; travel pay; accounting; and disbursing.

End-to-End Testing. The "end-to-end" process is the complete flow of data through a set of interconnected systems that perform a core business process, function, or mission. Data flow begins with the initial input of data to the first system and ends with the final receipt of data in the last system and receipt of output by the user. The purpose of Y2K end-to-end testing is to verify that the set of interrelated systems supporting DFAS business processes, such as DoD disbursing, operates and appropriately processes Y2K-related data.

DFAS Y2K End-to-End Master Plan. DFAS issued the "DFAS Y2K End-to-End Master Plan," version 2.3, June 21, 1999 (the DFAS Master Plan), specifically for accomplishing Y2K-related end-to-end testing of its mission-critical business processes. DFAS organized end-to-end testing into seven testing "events," one for each critical mission or business process. The DFAS Master Plan has further divided each event or business process into "threads." A thread represents an end-to-end trace of data using a minimally representative sample of input data transformed through the interconnected set of systems to produce a minimally representative sample of output data. Each event can contain one or more "threads" that track to a critical business process.

[1] We identified 42 DFAS mission-critical systems in previous audit reports. DFAS recently added three systems to its mission-critical list: the Standard Accounting and Reporting System – One Bill Pay, the Standard Army Financial Accounting and Reporting System, and the Standard Base Supply System.

The DFAS Master Plan identifies roles and responsibilities; assumptions and constraints related to testing; interfaces with non-DFAS organizations; and requirements for planning, testing, and reporting on test results.

Roles and Responsibilities. DFAS designated a Y2K project manager and functional proponent at DFAS Headquarters with overall Y2K testing responsibility. DFAS delegated that its functional proponents assign event leaders and thread leaders to execute the end-to-end testing. Also, DFAS assigned roles and responsibilities to system managers for controlling their segment of the end-to-end testing process.

Assumptions and Constraints. Because of limited time and resources, the DFAS Master Plan acknowledged constraints and identified assumptions related to Y2K end-to-end testing. The assumptions included, for example, that third-party software and computing platforms are Y2K compliant, that operations and compliance testing takes precedence over end-to-end testing, that partner organizations will conduct their own internal end-to-end tests and provide input for DFAS, or that all mission-critical systems will have contingency plans in place.

Interface Requirements. The DFAS Master Plan states that each test event will include critical automated interfaces with other departments and agencies. However, because of sizing limitations within the DoD megacenters that support testing, DFAS and the other DoD organizations may not be able to run true end-to-end tests simultaneously. Rather, each organization will maintain sufficient control of its segment of the end-to-end testing process to ensure the integrity of the data flow from one system to the other.

Planning, Testing, and Reporting. The DFAS Master Plan specified requirements for the following.

- **Live Instead of Simulation.** DFAS planned to test its business processes under normal operating conditions when possible. Otherwise, DFAS was to use a "time machine" or simulated operating conditions and document the reasons and associated risks.[2]

- **Critical Dates.** Although the DFAS Master Plan did not designate specific dates for testing, it did recommend that testing cover the following five time periods: the FY 2000 crossover, calendar year 2000 crossover, FY 2001 crossover, calendar year 2001 crossover, and leap year (February 29, 2000).

- **Baselines.** After testing those dates, DFAS organizations were to compare their test results to outcomes previously captured as the baseline. (The baseline is a set of known end-to-end test inputs and

[2] A "time machine" test strategy involves setting system clocks to the year 2000 and operating under testing conditions. Simulation is a program that allows testers to simulate changing dates rather than actually changing the dates during normal operations.

outputs captured from systems that were certified as Y2K compliant.) Each DFAS organization was to document the discrepancies between each of the tests and the baseline.

- **Data Analysis and Documentation.** The DFAS Master Plan requires that each DFAS organization develop and document in its test plan a data collection and analysis strategy that provides sufficient information to support end-to-end test design, results, and analysis.

Preliminary Assessment. On May 28, 1999, the Office of the Inspector General, DoD, provided DFAS with preliminary audit results in a memorandum regarding DFAS planning for end-to-end testing. On June 8, 1999, the DFAS Director for Information and Technology responded to the issues of roles and responsibilities, the DFAS Master Plan checklists, interfacing systems, critical Y2K crossover dates, data collection and analysis, and the transportation pay event. Office of the Inspector General, DoD, audit results and DFAS comments on the disbursing process are summarized in the finding section of this report. Appendix C contains a copy of the memorandum that the Inspector General, DoD, issued, and Appendix D is the DFAS response.

On July 14, 1999, we met with the DFAS Y2K project officer to discuss our concerns with testing of the disbursing process as a separate event. Testing of the disbursing process as a separate event may produce inconsistent or incomplete test results because the disbursing process is an integral part of each of the other six events. If no testing takes place on the interfaces between the disbursing event, the other six events, and systems external to the disbursing event, the risk will increase that the disbursing event may not be sufficiently tested to prevent disruptions at the year 2000. DFAS had since agreed to integrate the disbursing end-to-end tests with all entitlement end-to-end tests.

Objective

The overall audit objective was to evaluate the effectiveness of the planned end-to-end testing of the DoD disbursing process. Specifically, we reviewed the DFAS Master Plan and the test plans for conducting end-to-end testing within the disbursing pay area. The purpose of end-to-end testing is to verify that the set of interrelated systems supporting an organizational function, such as disbursing pay, interoperates as intended in an operational environment.

This report addresses plans for conducting Y2K end-to-end testing within the disbursing area. Other reports will address other DFAS functional areas. See Appendix A for a discussion of the audit scope and methodology and prior audit coverage related to the audit objective. We will review the implementation of the end-to-end test plans and the adequacy of contingency plans during future audit work.

Plans for End-to-End Testing of Disbursing Systems

The DFAS Y2K Project Office developed a sound methodology for conducting end-to-end testing. In addition, the disbursing event leader was aware of and actively involved in planning for end-to-end testing. However, DFAS needed to address the following issues:

- as planned, DFAS segregated the disbursing event from the other six events rather than including it as the culmination of each of the other events, and participation by other events to provide the necessary interfacing support and data to the disbursing event was slow;

- the "DFAS Headquarters Disbursing Business Area Year 2000 End-to-End Test Plan," April 19, 1999 (the Disbursing Event Plan), focused on three DFAS-owned systems that perform disbursing functions, but it did not include some critical test requirements prescribed by the "DoD Y2K Management Plan," Version 2.0, December 1998, and the DFAS Master Plan. Specifically, the Disbursing Event Plan was deficient in the following:

  - describing the test procedures, processes, and exit criteria;

  - providing a master schedule of test dates; and

  - discussing resources required for Y2K end-to-end testing; and

- the disbursing event system test plans lacked critical requirements for completing tests, baseline and test data for assessing test results, scenarios for testing data, and methods for conducting tests.

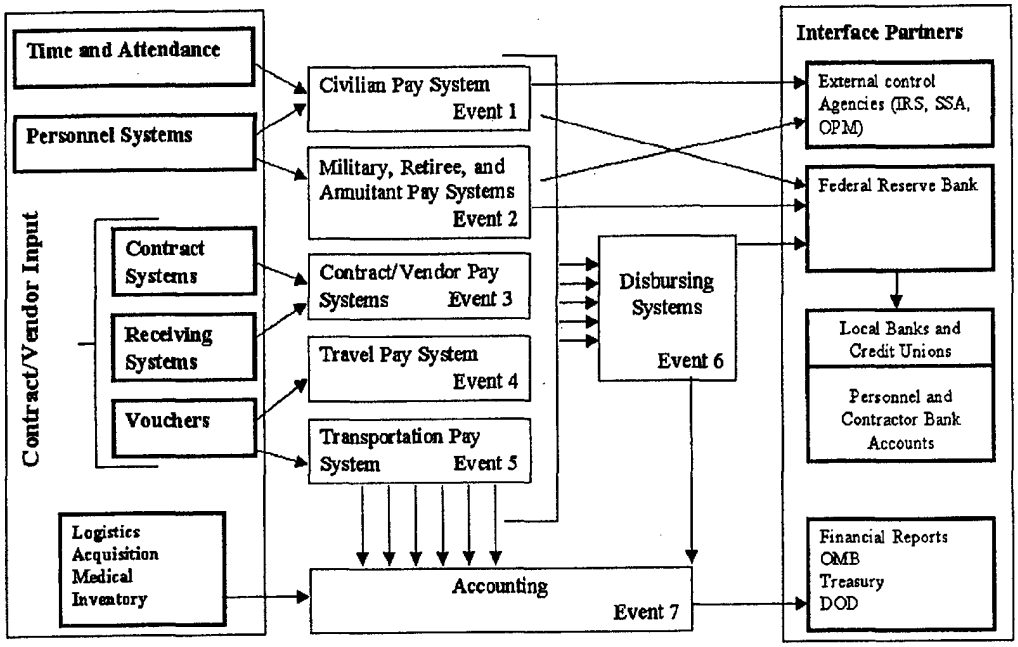
As a result, DFAS had not yet minimized the risk of disruption to the disbursing process.

DoD Disbursing Process

Definition of Disbursements. Within DoD, disbursements result when DoD entitlement systems generate files that are transferred into one of the principal disbursing systems. Entitlement is the legal right to receive items of pay or allowances. An entitlement system is one that would calculate the amount that would be received by a payee, such as an individual or company. Disbursing systems are those systems that provide disbursements to the payee in the amount of the entitlement either in the form of cash, electronic funds transfer, or check.

Generally, all disbursements funnel through DFAS. Depending on the type of payment, such as cash, electronic funds transfer, or check, the transaction is forwarded through the Federal Reserve Bank to a payee bank, or is sent directly to an individual or company.

Disbursing files are also routed directly to various accounting systems within DoD to record the transactions once completed. The following figure describes the flow of disbursement transactions from entitlement systems to recipients and DoD accounting systems.



IRS - Internal Revenue Service
OMB - Office of Management and Budget
OPM - Office of Personnel Management
SSA - Social Security Administration

Defense Disbursing Process

DFAS Process for Testing the Disbursing Event. The Disbursing Event Plan required disbursing event system test plans to test the following three DFAS-owned systems as "threads": the Automated Disbursing System (ADS) at the DFAS Cleveland Center; the Integrated Paying and Collecting/Central Disbursing System (IPC/CDS) at the DFAS Denver Center; and the Standard Finance System Redesign, Sub-System One (SRD-1) at the DFAS centers in Indianapolis, Indiana; Columbus, Ohio; and Kansas City, Missouri. Testing of the disbursing function began on June 4, 1999, and the last testing is scheduled on October 30, 1999.

Additional Disbursing System. Although DFAS identified three threads for end-to-end testing in the Disbursing Event Plan, the DoD Biennial Financial Management Improvement Plan (undated), Appendix B, "DoD FY 1998 Systems Inventory," also included a fourth disbursing system—the Standard Negotiable Items Processing System (SNIPS). DFAS did not include SNIPS in its Disbursing Event Plan because the disbursing event leader could not confirm that it was a DFAS-owned system. However, the disbursing event leader later stated that SNIPS should be considered a disbursing system for the event.

Because SNIPS was included as a mission-critical disbursing system in the Biennial Plan but was not included in the Disbursing Event Plan, the disbursing event leader should include it in the end-to-end testing of the disbursing event. DFAS needs to ensure that SNIPS is included in the testing, whether as part of the disbursing event or through alternative means to mitigate the risk of possible disbursing disruptions.

Systems Interfacing With DFAS Disbursing Systems. The four DFAS-owned disbursing systems interface with 27 mission-critical systems and 38 non-mission-critical systems. Of the 65 interfacing systems, 41 systems feed data into the four DFAS disbursing systems, and 24 systems receive data from the DFAS systems, to include the Federal Reserve Bank systems. For details on the four DFAS disbursing systems, see Appendix B.

Disbursing as a Separate Event

DFAS Designation of Disbursing as a Separate Event. For Y2K purposes, DFAS identified the disbursing process as one of its seven mission-critical processes, or events. DFAS did not include the disbursement process as an integral part of entitlement events such as military pay or civilian pay. DFAS chose to separate the disbursing event from the other events because disbursing is normally considered a separate business process within DFAS. However, DFAS disbursing operations do not include the processing of entitlement data; rather, disbursing systems rely on data from other business processes, such as military pay, to provide data for testing of the disbursing event. As such, testing of the disbursing event relies on interfaces and coordination with the other six events.

Coordination With Interfacing Organizations. The Disbursing Event Plan states that scheduling for testing is 100 percent dependent upon the coordination of system interfaces within the DFAS network as well as organizations such as the Federal Reserve Bank, Defense megacenters, and financial institutions. The Disbursing Event Plan contained a list of interfacing systems for each of the disbursing systems. However, the disbursing event leader was unable to determine the systems or interfaces for each event leader to test because the disbursing event leader did not have the authority to dictate to the other six event leaders or system managers when testing should be started or ended, or the systems that would be tested. In addition, DFAS personnel stated that end-to-end testing of disbursing systems was dependent on the dates of testing established with the Federal Reserve Bank FEDLINE system. The disbursing

event leader took the initiative to coordinate an end-to-end test schedule with Federal Reserve Bank personnel, but was limited to testing with the Federal Reserve Bank on specific dates and with specific test data. The disbursing event leader published the Federal Reserve Bank testing dates for the other six event leaders to use in selecting and coordinating test dates. As of June 28, 1999, the disbursing event leader stated that only the military pay and civilian pay event leaders had coordinated testing dates. However, on August 10, 1999, the disbursing event leader at DFAS Center Kansas City, Missouri, indicated that coordination with the other six events was improving.

Testing of the disbursing process as a separate event may produce inconsistent or incomplete test results because the disbursing process is an integral part of each of the other six events. Therefore, thorough testing of interfaces between the disbursing event, the other six events, and systems external to the disbursing event is especially crucial.

The DFAS Y2K project manager should obtain agreements for end-to-end testing of systems interfacing with the four disbursing systems. Not much time remains for scheduling of tests with the other six events. Any problems in completing this coordination should be reported immediately to senior management.

DFAS Headquarters Disbursing Event Planning

The Disbursing Event Plan did not include some critical test requirements prescribed by the DoD Y2K Management Plan and the DFAS Master Plan. The DoD Y2K Management Plan states that an event plan should identify the mission-critical systems to be tested and the expected results. The DFAS Master Plan states that each event plan should contain descriptions of test procedures, processes, exit criteria, schedules, and the resources required for conducting the test.

The Disbursing Event Plan did identify the mission-critical systems to be tested for three of the four disbursing systems, but it did not provide a description of expected results. Also, the Disbursing Event Plan was deficient in describing the procedures, processes, and exit criteria. In addition, the Disbursing Event Plan did not provide a master schedule of when testing was to begin or end, nor did it provide a discussion on the types of resources that may be required in conducting the tests. Further, the Disbursing Event Plan did not include the necessary details for testing the entitlement and accounting systems that provide data to the disbursing systems.

The Disbursing Event Plan indicated that the system managers at each of the DFAS centers were responsible for developing the individual test plans for those disbursing systems that operate at the particular centers. The Disbursing Event Plan also states that test setup, execution, recovery plans, criteria for test readiness, test data, use of checklists, data collection and analysis, and test exit criteria would be described in each DFAS center test plan in which disbursing systems operate. The system test plans that the system managers developed did

not include critical requirements for testing, collection of baseline data for comparison to actual test results, consistent use of DFAS Headquarters-developed test scenarios, or a determination of a specific test methodology for using "time machines."

By allowing each DFAS center to develop a disbursing end-to-end test plan separately, a higher risk exists that test plans may not achieve the requirements described in the DFAS Master Plan. The DFAS disbursing event leader needs to take a more proactive role in ensuring that test setup, execution, recovery, and exit criteria are consistently applied throughout the testing of the disbursing event.

Disbursing Event System Test Plans

DFAS system managers independently developed a disbursing event system test plan for the end-to-end testing of each of the four DFAS-owned disbursing systems. However, the disbursing event system test plans need additional detail to adequately address the requirements described in the Disbursing Event Plan. Specifically, the individual disbursing event system (thread) test plans lacked the following:

- critical requirements for testing,
- requirements to collect baseline and test data,
- consistent use of test scenarios, and
- determination of a testing methodology.

Critical Requirements for Testing. The disbursing event system test plans lacked critical requirements for testing. For example, the Disbursing Event Plan states that the system test plans should provide details on test setup, execution, recovery plans, criteria for test readiness, test data, use of checklists, data collection and analysis, and test exit criteria. However, the four disbursing test plans included only minimal details on test setup, execution, and recovery. The four test plans provided no detail describing the predicted results. In addition, the four test plans lacked a master schedule for testing the various interfaces with the mission-critical systems, although each of the plans did provide a start and ending date. Further, the four test plans did not always indicate the files or interfaces that were to be tested and when specific interfaces were to be tested.

Although each of the plans discussed resources, the test plans provided insufficient information on the types of resources that may be required in conducting the end-to-end tests. For example, the IPC/CDS test plan indicated the need for a computer and a printer, but it did not discuss the need for additional resources such as heating and air conditioning, local area networks, testers, or space requirements. Also, the IPC/CDS test plan assumed that testing platforms would be available when needed. Although the SRD-1 test

plan specifically addressed the requirement for resources such as administrative supplies, telephone lines, and arrangements with direct and indirect computer support personnel for extended work hours to support the test, the plan did not state whether the resources were committed for testing.

Also, the end-to-end test plans were inconsistent in their approach for testing the disbursing event. For example, the end-to-end test plans for ADS included the requirement to establish an inter-organizational end-to-end test team. The team was responsible for developing test scenarios and exit criteria. Conversely, the DFAS Denver Center was procuring assistance for developing the IPC/CDS test plan from the Standard Systems Group at Maxwell Air Force Base. Further, the Disbursing Event Plan did not identify specific disbursing processes that would be tested.

The lack of detailed guidance in the Disbursing Event Plan contributed to the inconsistent development of the system test plans. Without standard guidelines for developing detailed, consistent test plans, a higher risk exists for inconsistent testing for the four DFAS-owned disbursing systems. Because test setup, execution, and recovery are critical to the success of testing, the disbursing event leader should assist the systems managers of the four DFAS-owned disbursing systems in identifying critical elements and resources to ensure a successful test so that disbursing disruptions are kept to a minimum.

Collection of Baseline and Test Data. The DFAS Headquarters did not require the collection of data for establishing a baseline to compare with test results. Also, DFAS did not establish a standard method for collecting the data. The plans for testing each disbursing system provided limited details on the methodology to collect data for the end-to-end tests.

Establishing a Baseline. The Disbursing Event Plan states that the methodology for conducting tests should be presented in each DFAS center's end-to-end test plan. However, none of the test plans for any of four DFAS disbursing threads included the requirement to obtain data to establish a baseline to compare against actual test results. DFAS management should encourage the capturing of baseline information before beginning testing so that results can be compared and discrepancies corrected before the year 2000. By collecting data for establishing a baseline, DFAS could better ensure that all disbursing processes were tested properly, and that they meet Y2K requirements.

Collecting Data for Tests. The DoD Y2K Management Plan states that test plans should specify in detail the Y2K data that need to be collected, those responsible for analyzing the data, the methods for analyzing the data, the facilities to be used to analyze the test results, the mechanism for sending the data to the analysis site, the necessary support, and the identification of analysis resources. The DFAS Master Plan requires each DFAS organization to develop a strategy for collecting and analyzing data. The strategy should assist with designing end-to-end tests, capturing test results, and performing post-testing actions. Establishing a standard format for collecting test data would also provide for consistent data collection.

The plans for testing each disbursing system provided limited details on how data would be collected for the end-to-end tests. For example, the SRD-1 test plan simply stated that upon completion of each test, the essential elements for analysis would be signed by a representative witnessing the test. In addition, although the test plan did include a form for recording test results and obtaining signatures from test participants, the plan did not specify the information to be collected or reported. Further, the IPC/CDS, SNIPS, and ADS test plans did not mention how or what data would be collected or reported.

Although the collection of baseline data was not included in the system test plans, baseline data collected during testing would alleviate testers' difficulty in determining whether the actual results received during the end-to-end tests are reasonable. By not having baseline data defined in advance, DFAS increases the risk that the disbursing end-to-end tests would not be adequately performed or that the results would not be accurate. Without establishing standard test collection formats, the data analysis may not be consistent or accurate.

Consistent Use of Test Scenarios. The system test plans for the four disbursing threads did not include all of the test scenarios reflected in the Disbursing Event Plan. The Disbursing Event Plan showed three separate test scenarios for each of the four threads. Those three scenarios were as follows.

Test Scenario 1. Test Scenario 1 would require the duplication of a prior pay file (such as civilian pay) that would be processed through the disbursing systems to the Federal Reserve Bank. The dates in the files would be manipulated to future dates. The Federal Reserve Bank would receive, test, and make distribution of the files to financial institutions. (The files would include some bad records; the financial institutions were to return those records to the disbursing system.)

Test Scenario 2. In Test Scenario 2, entitlement systems would send a file to the disbursing system with manipulated future dates. From the disbursing system, the file would be processed to the Federal Reserve Bank.

Test Scenario 3. In Test Scenario 3, users and customers would input data to entitlement systems that would process transactions, with Y2K test dates, through the disbursing systems. The disbursing systems would process the transactions to the Federal Reserve Bank for distribution to the applicable financial institutions. Transactions not accepted by the financial institutions were to be returned to disbursing.

None of the four test plans specifically stated that testing would include the three test scenarios. Three of the four test plans provided only brief descriptions of testing. For example, the IPC/CDS test plan stated that it would have tiered testing to include entitlement and collection system interfaces and that it would process electronic funds transfer and check payment files to the Federal Reserve Bank. Also, the plan stated that the system would process a disbursing officer's daily, monthly, and annual accountability reports.

The SRD-1 test plan stated that DFAS personnel would generate data input at the test site or data would be available from the batch processing of external

systems. Although the ADS test plan listed tasks to be completed, it did not provide how, when, where, or who would complete the tasks. Only the SNIPS test plan provided a very limited description of test scenarios, but even the SNIPS plan did not describe what the scenarios would accomplish, or the expected test results.

The four disbursing system test plans did not ensure that testing would be completed with the Federal Reserve Bank or with the entitlement systems. Essentially, the plans were very limited in their description of what was to be tested and when, how, or who would conduct the tests. The three test scenarios described in the Disbursing Event Plan provide for a complete assessment of the disbursing process. DFAS needs to use the three test scenarios to ensure consistent testing of its disbursing systems, to ensure that test results are reliable, and to ensure that the four disbursing systems will work as intended when the year 2000 occurs.

Determination of Testing Methodology. The testing methodology presented in the system test plans did not ensure that end-to-end testing would occur under conditions similar to normal operating conditions. The DFAS Master Plan required tests to be performed during normal operations, if possible, and to use "time machines" when normal operations were not feasible. A "time machine" changes the test environment (computer software and hardware) to the year 2000 and uses software and computer equipment representative of normal operations.

None of the four disbursing system test plans indicated that tests would be conducted under normal operating conditions. Only the IPC/CDS system test plan indicated that it would use the "time machine" methodology. The other three disbursing test plans did not indicate a testing methodology.

The DFAS Master Plan stated that if testing under normal operating conditions or the use of "time machine" testing was not possible, the testing organization should use simulation software, document the reasons for using the software, and describe the associated risk. However, use of the simulation methodology would cause DFAS to incur a higher degree of risk of potential Y2K failure because the simulation software bypasses computer codes that might perform changes to dates.

In the absence of testing under normal operating conditions, DFAS must encourage its system managers to use the "time-machine" methodology when testing end-to-end. Use of simulation testing or any other testing methodology may not provide adequate assurance that the software and related computer equipment will operate as intended when the year 2000 occurs.

Alternative Measures. Senior DoD managers have emphasized that systems should undergo independent validation of the testing or testing results. Where testing has been inadequate or in need of retesting, alternative measures need to be considered given time constraints. Alternative measures may include, for example, retesting or the use of automated tools. The use of automated Y2K tools called code scanners has identified hundreds of Y2K errors in systems previously certified as compliant. Code scanners have been made available free

of charge within DoD and may be used at any time, during or after the testing process. In addition, it may be appropriate to alert those responsible for contingency planning to expand plans as necessary.

Actions Taken by DFAS

Distribution of Revisions to the DFAS Master Plan. DFAS initially did not address how its revised Master Plan would be distributed to disbursing personnel planning for end-to-end tests. However, on May 18, 1999, DFAS stated that revisions to its Master Plan would be posted on a web site. Further, DFAS stated that any major changes to the DFAS Master Plan would be forwarded to the event leaders for implementation and further dissemination. Those actions would allow the personnel to know about changes in requirements and to make necessary adjustments.

Interim Inspector General, DoD, Results of Audit. On May 28, 1999, the Inspector General, DoD, issued a memorandum to the Director for Information and Technology, DFAS, on six issues concerning the DFAS end-to-end test plans (see Appendix C). The Director for Information and Technology responded in a memorandum on June 8, 1999 (see Appendix D). Three of the six issues apply to the disbursing event, which were the master plan checklists, interfacing systems, and data collection and analysis.

Master Plan Checklists. Our memorandum indicated a concern that the checklists in the DFAS Master Plan were not mandatory. DFAS responded that, although it would encourage the use of the checklists, it would not mandate the completion of the checklists.

Interfacing Systems. DFAS relied heavily on interfacing systems to provide the majority of data included in its systems. Our memorandum emphasized the need for coordination and compatibility of data exchanged with interfacing systems for successful Y2K end-to-end tests. DFAS agreed that coordination and compatibility is essential and stated that it established agreements with all of its interfacing partners. However, the test plans did not provide details on milestones and schedules to ensure that coordination with interfacing partners was sufficient.

Data Collection and Analysis. In response to our memorandum, DFAS stated that it would define specific exit criteria for the test planning phase. In addition, DFAS hired the Joint Interoperability Test Command to validate and verify the end-to-end planning and testing efforts. DFAS believes that the Joint Interoperability Test Command will analyze and document specific risks associated with data collection and analysis procedures, in sufficient time for DFAS to take appropriate action. DFAS also stated that it would meet with thread participants and emphasize the need for adequate documentation of data collection and analysis procedures.

Summary

DFAS managers developed a sound overall methodology for conducting end-to-end testing. Also, the managers were aware of and actively involved in planning for end-to-end testing. However, because testing of disbursing was performed as a separate event, the results may be inconsistent or incomplete because the disbursing process is reliant on input from each of the other six events. If interfaces do not have proper testing between the disbursing event, the other six events, and systems external to the disbursing event, the risk will increase that the disbursing event may not be sufficiently tested to prevent disruptions at the year 2000.

In addition, the Disbursing Event Plan was deficient in describing the test procedures, processes, and resources that may be required for conducting end-to-end tests. Also, the event plan did not contain a master schedule of when testing was to begin or end, nor did it contain the criteria for successful completion of end-to-end testing. Further, the disbursing system test plans lacked critical requirements for testing the disbursing event, procedures for developing test data and expected test results (a baseline), consistency in the use of test scenarios, and standardization in the selection of a test methodology. As a result, the disbursing event plan and the disbursing system tests for end-to-end testing may not fully ensure that the processing and disbursing of payments will continue unaffected. Because some of the issues identified in this report might not be resolved before the completion of testing, DFAS needed to initiate alternative measures to mitigate the risks of disbursing systems not being able to successfully process data after the year 2000. Alternative measures may include, for example, performing supplementary end-to-end tests of the event, using code scanners, or expanding event contingency plans.

Recommendations and Management Comments

We recommend that the Director, Defense Finance and Accounting Service:

1. Initiate steps to include the Standard Negotiable Items Processing System in the end-to-end testing process, whether as part of the disbursing event or another event.

2. Initiate alternative measures to mitigate the risks of disbursing systems not being able to successfully process data after the year 2000. Such alternative measures may include performing supplementary end-to-end tests of the event, using code scanners, or expanding event contingency plans.

Management Comments. The Director for Information and Technology, DFAS, concurred, stating that the Standard Negotiable Items Processing System was included in an end-to-end test. The DFAS will code scan the disbursing systems. The expected completion date of the scanning is October 30, 1999.

Appendix A. Audit Process

This report is one in a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts to address the Y2K computing challenge. For a list of audit projects addressing the issue, see the Y2K web page on IGnet at http://www.ignet.gov.

Scope and Methodology

Work Performed. We performed audit work within the Defense Finance and Accounting Service. Also, we reviewed the DFAS Master Plan and its event plans, and we held discussions with DFAS managers to obtain additional information and clarification on roles and responsibilities of its Y2K managers.

We reviewed Y2K reporting requirements and policies issued by the Office of the Secretary of Defense and DFAS. More specifically, we reviewed the "DoD Year 2000 Management Plan," Version 2.0, December 1998; the "DFAS Y2K End-to-End Master Plan," Version 2.3, June 21, 1999; the "DFAS Year 2000 Management Plan," Version 2.1, June 1999; the DFAS Regulation 8000.1-R, "Information Management Policy and Instructional Guidance," Appendix E, Chapter 3, "Test and Evaluation," October 15, 1998; and the DoD Financial Management Regulation, Volume 5, "Disbursing," August 1998.

In addition, we reviewed the test plan documentation for the four principal DoD disbursing systems—the Standard Finance System Redesign, Sub-System One; the Integrated Paying and Collecting/Central Disbursing System; the Automated Disbursing System; and the Standard Negotiable Items Processing System.

DoD-Wide Corporate-Level Government Performance and Results Act Goals. In response to the Government Performance and Results Act, the Department of Defense has established two DoD-wide goals and seven subordinate performance goals. This report pertains to achievement of the following goal and subordinate performance goal:

Goal 2: Prepare now for an uncertain future by pursuing a focused modernization effort that maintains U.S. qualitative superiority in key warfighting capabilities. Transform the force by exploiting the Revolution in Military Affairs, and reengineer the Department to achieve a 21st century infrastructure. **Performance Goal 2.2:** Transform U.S. military forces for the future. **(00-DoD-2.2)**

General Accounting Office High-Risk Area. The General Accounting Office has identified several high-risk areas in DoD. This report provides coverage of the Information Management and Technology high-risk area. In its identification of risk areas, the Y2K problem has been specifically designated as high risk by the General Accounting Office.

Use of Computer-Processed Data. We did not use computer-processed data to perform this audit.

Audit Type, Dates, and Standards. We performed this financial-related audit by reviewing event and test plans dated from April through June 1999, in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD.

Contacts During the Audit. We visited or contacted individuals and organizations within DoD. Further details are available on request.

Management Control Program. We did not review the management control program related to the overall audit objective because DoD recognized the Y2K issue as a material management control weakness area in the FY 1998 Annual Statement of Assurance.

Summary of Prior Coverage

The General Accounting Office and the Inspector General, DoD, have conducted multiple reviews related to Y2K issues. General Accounting Office reports can be accessed over the Internet at http://www.gao.gov. Inspector General, DoD, reports can be accessed at http://www.dodig.osd.mil.

Appendix B. DoD Disbursing Systems

Standard Finance System Redesign, Sub-System One (SRD-1). SRD-1 makes disbursements at the installation and DFAS-center levels of operations. The system includes all disbursement functions and the reporting requirements within the finance and accounting offices.

Standard Negotiable Items Processing System (SNIPS). SNIPS produces payroll checks for the active and reserve Army military units. Payroll checks are processed through the electronic funds transfer system.

Integrated Paying and Collecting/Central Disbursing System (IPC/CDS). The IPC/CDS is composed of approximately 149 programs that create check and electronic funds transfer payments, process cashier transactions, and prepare accountability reports in both U.S. dollars and foreign currency. The IPC/CDS system operates at the DFAS Denver Center; however, program management responsibility for the systems was transferred from the DFAS Denver Center to the Standard Systems Group at Maxwell Air Force Base, Montgomery, Alabama, in 1991. CDS will replace IPC and is expected to be deployed in October 1999.

Automated Disbursing System (ADS). ADS provides automated disbursing and accounting pay processing in the DFAS Cleveland Center and eliminates the need for manual posting of daily transactions to a cashbook or spreadsheet. ADS is responsible for providing support to approximately 18 interfaces. Also, ADS processes payment and collection files submitted from entitlement systems, produces accountability reports for the disbursing officer, and passes payment information to the Federal Reserve Bank for electronic funds transfer payments.

Appendix C. Inspector General, DoD, Interim Report

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202-2884

MAY 28 1999

MEMORANDUM FOR DIRECTOR FOR INFORMATION AND TECHNOLOGY, DEFENSE FINANCE AND ACCOUNTING SERVICE

SUBJECT: Status of Audits of Finance Functional Area Year 2000 End-to-End Tests

In April 1999, we initiated the following audit projects to evaluate the effectiveness of Y2K end-to-end testing by the Defense Finance and Accounting Services (DFAS). The projects were aligned by functional area in accordance with the functional break-out identified by DFAS

Civilian Pay	Project 9FG-9025
Military/Retiree/Annuitant Pay	Project 9FG-9026
Vendor/Contractor Pay	Project 9FG-9027
Transportation Pay	Project 9FG-9028
Disbursing	Project 9FG-9029
Accounting	Project 9FG-9030
Travel Pay	Project 9FG-9031

Our review, to date, has focused on analyzing the adequacy of test plans for the seven areas. We evaluated the adequacy of the DFAS Y2K test plans using requirements contained in the DoD Y2K Management Plan, Version 2.1, Appendix I; the DFAS Y2K Management Plan, Version 1.0; the DFAS Y2K End-to-End Master Plan, Version 2.1; the DFAS Regulation 8000.1-R, "Information Management and Instruction Guidance," Version 5 0; and the GAO Operational Evaluation Assessment Tool. We anticipate future audits will assess test results and contingency planning efforts by DFAS

Because of the urgency of Year 2000 efforts, our intent is to communicate potential areas of concern as quickly as possible so that management may address these issues in a timely manner. The attachment to this memorandum reports the initial results of our review. During our preliminary review, we identified concerns regarding the adequacy of DFAS planning efforts for functional end-to-end testing. If these concerns are not addressed, there is increased risk that DFAS end-to-end testing may not detect a significant Y2K problem. We may include these and any additional issues in a draft report at a later date. We request that you provide a response to this memorandum by June 8,1999. If there are any questions, please contact Ms. Kimberley Caprio, Program Director at (703) 604-9139 or DSN 664-9139.

F. Jay Lane
Director
Finance and Accounting Directorate

DFAS has made significant progress in addressing testing requirements for its functional areas including the issuance of a Master Plan, identification of levels of responsibility, and checklists for test planning purposes. During our review, we identified the following concerns that should be addressed by DFAS. On May 27, 1999, we met with DFAS officials to discuss the concerns and actions to be taken.

1. Roles and Responsibilities. The DFAS Master Plan identified four levels of responsibility for end to end testing including Headquarters functional proponents, systems managers, event leaders, and thread leaders. The Plan defined roles and responsibilities for functional proponents and systems managers, but did not provide details on the responsibilities for either the event or thread leaders During the May 27, 1999 meeting, DFAS Headquarters personnel, acknowledged the need for oversight and agreed to provide the details immediately.

In addition, the Master Plan was not issued until May 11, 1999, and in some cases had not arrived at the event leader level until May 18, 1999. However, functional event plans and allocation of responsibilities was already occurring. As a result, the individuals delegated the responsibilities may not have been appropriate. For example, for the Travel pay event, the same person was tasked as both the functional proponent and the event leader As a result, it precludes the separation of duties by allowing one function to oversee the other function To ensure that the 4 levels of responsibility are appropriately staffed, the DFAS Headquarters Project Office should review the assigned personnel and ensure that they are aware and understand their delegated responsibilities.

2. Master Plan Checklists. The DFAS Y2K Master Plan included four checklists to be used by DFAS Headquarters personnel, the functional area proponent, the event leader, and the tester. These checklists require DFAS personnel to assess the effectiveness of the end-to-end testing program at each designated level including such items as assessing the adequacy of testing staff, funds, and interface agreements The DFAS Master Plan stated that these checklists would "provide independent auditors with evidence of compliance with the end-to-end test requirements," however, the Master Plan did not make completion of the checklists mandatory.

We believe the checklists should be mandatory and maintained at the functional level along with test results. The 2 to 3 page checklists provide an excellent means to ensure and document that essential steps were taken prior to performing end to end testing of DFAS functional areas. Completion of the planning section of these checklists provides a tool to help ensure compliance with the Master Plan requirements and allow for early corrections of deviations or omissions from the plan. Further, use of the checklist affords standardization of the process used throughout DFAS for end to end test planning efforts. Without the use of the checklists, DFAS lacks assurance that the testing was complete, adequate, and consistent. We also believe that a

Attachment
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signature block or notation should be included in the checklists to establish accountability for the responses and to facilitate quick actions should a problem arise later.

3. Interfacing Systems. DFAS relies heavily on interfacing systems to provide the majority of data included in DFAS systems. As such, coordination and compatibility of data exchanged with interfacing systems is critical to ensuring successful Y2K end to end tests If data from a non-compliant system feeds into a DFAS system, the potential exists for the DFAS system to not be able to function properly after Y2K The level of assurance being obtained by DFAS functional area officials regarding Y2K compliance of interfacing systems varies from exchanging documentation to merely assuming that interfacing systems are compliant or relying on verbal responses.

Given the significant potential impact of interfaces on successful testing, we believe that DFAS functional leaders should take the extra step to validate that key interfacing systems are, in fact, compliant. Information on the compliance of each DoD mission critical system should be available in the OSD database. As such, DFAS personnel for the functional areas should be able to access the database and validate that those applicable interfacing partners are clearly designated as Y2K compliant before entering the end-to-end test. We discussed this matter with DFAS Headquarters officials who agreed that, while they are only testing with compliant interfacing partners, it is reasonable that DFAS review the database to ensure that interfacing partners are compliant prior to testing.

4. Critical Crossover Dates. The DFAS Master Plan identified 5 critical cross-over dates as mandatory for inclusion during end-to-end tests. The dates are consistent with the 5 dates recommended by the Assistant Secretary Defense (Command, Control, Communications, and Intelligence) The dates are fiscal year 2000, calendar year 2000, leap year crossing (February 29, 2000), fiscal year 2001, and calendar year 2001. Developers of DFAS test plans have not planned to test all 5 dates. For example, the Marine Corp Total Force System is only testing the leap year 2000 crossover. The Computerized Accounts Payable System is not testing the fiscal year and the calendar year 2001 crossovers The reduced number of dates being tested is a result of:

- The test plans being developed prior to the issuance of the DFAS Master Plan on May 11, 1999,
- Personnel pay systems, for example, not being impacted by fiscal year changes,
- Funding being allocated based on test plans developed prior to the Master Plan.

In order to ensure compatibility of interfacing systems, it is important that the same dates are tested, particularly where DFAS systems feed data to other systems. For example, data from systems within the Travel Pay test event feed into systems within the Disbursing test event. Further, once processed within disbursing, data is fed to both

accounting and back to travel systems. Incoming files to the Automated Disbursing System (ADS) (part of the Disbursing test event) plan to test all dates specified in the DFAS Y2K Master Plan However, the Travel Pay test event does not plan to test the fiscal year 2000 to 2001 crossover. As a result, the potential exists that data relying on the fiscal year 2000 to 2001 crossover may not function properly. Meanwhile, DFAS may report a successful test based on the less than 5 dates being tested.

It is important that interfacing systems select test dates in a similar manner to ensure Y2K data flows through each system appropriately. DFAS functional leaders should ensure that critical crossover dates for each of the seven functional areas are compatible prior to testing.

5. Data Collection and Analysis. The DoD Y2K Management Plan states that Y2K event output products such as plans and procedures should specify in detail what data needs to be collected, who will analyze the data, and how it will be analyzed. Essentially, the requirement is to define expected test results. Consistent with the DoD Plan, the DFAS Master Plan requires, as exit criteria to the test planning phase, that responsible parties specify pass/fail criteria for all tests, that data collection procedures are in place, and mechanisms needed to capture data are installed. The DFAS Master Plan, however, does not specify:

- What types of data should be collected to ensure consistency in reporting test results.
- A methodology for each DFAS organization to document the data collection process in the appropriate Event Plan

For the 7 DFAS functional events, data collection and data analysis plans are either nonexistent or do not ensure the tests will be judged objectively For example, the Defense Industrial Financial Management System (DIFMS) Test Plan, which is part of the Accounting Test Event, plans to review reports, queried data, and DIFMS screens to accomplish data analysis, but did not establish expected test results criteria or a baseline that could be used to determine the adequacy or accuracy of the reports, queries, and screens. As another example, the Civilian Pay Event lacks either a data collection plan or a data analysis plan. Instead, the Event Leader indicated that years of prior testing and DCPS experience will identify discrepancies should they arise.

Both DoD and DFAS require the establishment of a structured approach to testing including identifying expected outcomes, test participants, and other details. Without such plans, there is no organized or standardized approach between the participating systems, nor any assurance that test goals are met and tests were successful. Given the nature of end-to-end testing, with its large numbers of participating or "partner" systems, it is prudent to ensure that the data collection is as consistent as possible for each event, and that the analysis of the test data is objective. Without the definition of data collection and data analysis plans before testing begins, this will be difficult.

DFAS Functional Test Leaders need to ensure that detailed test collection, results, and analysis requirements are clearly defined prior to testing.

6. Transportation Pay Event. DFAS identified Transportation Pay as one of the 7 functional areas for testing purposes However, DFAS has not yet developed an end-to-end test plan for the event. There are two systems involved in transportation, the Defense Transportation Pay System (DTRS) and the Military Traffic Management Command - Financial Management System (MTMC-FMS). The Transportation Pay Event Leader stated that MTMC-FMS testing during Y2K conversion process accomplished the end-to-end requirements of the Master Plan. DFAS has subsequently contracted with the Joint Interoperability Testing Command (JITC) to independently verify and validate the prior testing. We plan to follow-up on this functional area

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Appendix D. Defense Finance and Accounting Service Interim Report Response

DEFENSE FINANCE AND ACCOUNTING SERVICE
1931 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22240-5291

JUN 8 1999

DFAS-HQ/S

MEMORANDUM FOR DIRECTOR, FINANCE AND ACCOUNTING DIRECTORATE
OFFICE OF THE INSPECTOR GENERAL, DEPARTMENT OF DEFENSE

SUBJECT: Status of Audits of Financial Functional Area Year 2000 End-to-End Tests

The attached outlines Defense Finance and Accounting Service (DFAS) response to the DoD Inspector General's (IG) initial review of and concerns about DFAS' End-to-End Test (E2E) Plans. DFAS recognizes that a great deal of work is still to be done to ensure all necessary requirements for E2E are accomplished. To meet this goal, DFAS has conducted meetings with event and thread leaders to review all E2E guidelines and requirements.

All concerns addressed in the DoD IG's memo are being addressed.

Roles and Responsibilities: Concur. Action to expand event and thread leader roles will be accomplished by June 25, 1999.

Master Plan Checklist: Non-concur. DFAS will not mandate the checklist.

Interfacing Systems: Concur. This action is considered completed, but with periodic updates.

Critical Crossover Dates: Concur. This action is completed.

Data Collection and Analysis: Concur. This is an ongoing action with no specific target date.

Transportation Pay Event: Concur. This is an ongoing action with a target completion date of June 30, 1999.

C. Vance Kauzlarich
Director for Information and Technology

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Roles and Responsibilities. Concur. DFAS acknowledges that testing and planning activities were occurring prior to the issuance of the Master Plan on 6 May. However, several coordination meetings had already occurred and guidance on developing Event Plans was issued on 31 March. DFAS also acknowledges the need to clarify and augment the roles and responsibilities of the event and thread leaders in the DFAS E2E Master Plan. We are currently making site visits and meeting with the testing teams to clarify roles and responsibilities and are updating the Master plan as well. It should be noted there may be an overlap in the area of responsibility, due to the fact that the internal DFAS support structure for each business process/application has a great bearing upon the specific breakout of roles and responsibilities. DFAS does not view this as a conflict or an inappropriate assignment of duties.

Master Plan Checklist. Non-concur. DFAS designed and issued these checklists as tools to assist DFAS personnel responsible for planning, tracking, and conducting end to end testing. Because each business area/application has a normal testing practice already established, DFAS did not make the checklists mandatory, and would prefer to keep the use of checklists optional. However, DFAS will encourage the use of the checklists whenever possible.

Interfacing Systems. Concur. DFAS agrees that coordination and compatibility of data exchange between DFAS systems and their interface partners is essential to a successful Y2K effort. DFAS has pursued this goal for the past two years. DFAS has established Interface Agreements with all of its interface partners. This effort generated in excess of 1400 agreements. In addition, DFAS has tracked and updated on a monthly basis the status of testing and compliance of each of its interface partners. DFAS system mangers are well aware of the status of each of its partners. DFAS will continue to track and monitor the status of its interface partners mission critical and other.

Critical Crossover Dates. Concur. DFAS acknowledges the importance of testing as many dates as possible, and the coordination of these dates among partners. All DFAS managers have been encouraged to coordinate this initiative with all pertinent parties. It must be understood that dates do not necessarily play an important part in the relationship of one system to another. The DFAS E2E Master Plan has recently been updated to empower the Functional

Managers with determining which dates are critical for testing within their specific business process. We have also hired JITC to independently validate and verify our planning efforts.

Data Collection and Analysis. Concur. DFAS agrees that current plans lack specific exit criteria and we are taking action to strengthen this area of our plans. DFAS 8000.1-R, Part E, Chapter 3, Test and Evaluation provides guidance concerning data collection and analysis. Our central design activities normally plan and execute their tests, using this guidance, precluding the need for specific guidance to be issued relative to E2E testing.

Each testing agent within DFAS implements the regulation within their own construct, resulting in a non-standard, but successful, data collection and analysis process. Because Y2K E2E testing requirements are not system centric, but business process centric, we have hired JITC to independently validate and verify our E2E planning and testing efforts. The JITC analysis/evaluation will document specific risks associated with data collection and analysis procedures, in sufficient time for us to take corrective action.

Another measure of risk mitigation is to conduct site visits, where we meet with all thread participants. During these meetings we are emphasizing the need for adequate documentation of their data collection and analysis procedures, as well as documenting version control and configuration management procedures.

Transportation Pay Event. Concur. In addition to the Transportation Pay System, DFAS has identified several other systems, which claim completion of the end to end testing initiative. JITC will be used to verify that these systems indeed have met E2E requirements. If any system fails to pass the validation of JITC, steps will be initiated to complete all or any portion of the E2E process that needs to be completed.

Appendix E. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense for Acquisition and Technology
  Director, Defense Logistics Studies Information Exchange
Under Secretary of Defense (Comptroller)
  Deputy Comptroller (Program/Budget)
Assistant Secretary of Defense (Command, Control, Communications, and Intelligence)
  Deputy Chief Information Officer and Deputy Assistant Secretary of Defense (Chief Information Officer Policy and Implementation)
    Principal Director for Year 2000

Joint Staff

Director, Joint Staff

Department of the Army

Assistant Secretary of the Army (Financial Management and Comptroller)
Chief Information Officer, Department of the Army
Inspector General, Department of the Army
Auditor General, Department of the Army

Department of the Navy

Assistant Secretary of the Navy (Financial Management and Comptroller)
Chief Information Officer, Department of the Navy
Inspector General, Department of the Navy
Auditor General, Department of the Navy
Inspector General, Marine Corps

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Assistant Secretary of the Air Force (Financial Management and Comptroller)
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Inspector General, Department of the Air Force
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General Accounting Office
  National Security and International Affairs Division
    Technical Information Center
  Director, Defense Information and Financial Management Systems, Accounting and Information Management Division, General Accounting Office

Congressional Committees and Subcommittees, Chairman and Ranking Minority Member

Senate Committee on Appropriations
Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
Senate Special Committee on the Year 2000 Technology Problem
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Committee on Armed Services
House Committee on Government Reform
House Subcommittee on Government Management, Information, and Technology, Committee on Government Reform
House Subcommittee on National Security, Veterans Affairs, and International Relations, Committee on Government Reform
House Subcommittee on Technology, Committee on Science

Defense Finance and Accounting Service Comments

DEFENSE FINANCE AND ACCOUNTING SERVICE
1931 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22240-5291

DFAS-HQ/S

SEP 30 1999

MEMORANDUM FOR DIRECTOR, FINANCE AND ACCOUNTING DIRECTORATE
OFFICE OF THE INSPECTOR GENERAL, DEPARTMENT OF DEFENSE

SUBJECT: Draft of a Proposed Audit Report on Defense Disbursing Year 2000 End-to-End Testing (Project No. 9FG-9029) dated September 2, 1999

The Defense Finance and Accounting Service response to the Department of Defense Inspector General's Report on Defense Disbursing Year 2000 End-to-End Testing is attached.

The recommendations in subject report are being implemented as outlined. The Disbursing End-to-End Testing has been fully integrated with all entitlement business areas All disbursing systems have been included in numerous successful tests to date.

Richard A Farnon Jr:

C. Vance Kauzlarich
Director for Information and Technology

Attachment:
As stated

COMMENTS ON
DRAFT REPORT OF AUDIT
ON DISBURSING
YEAR 2000 END-TO-END TESTING
PROJECT NO. 9FG-9029

1. **Recommendation #1:** Initiate steps to include the Standard Negotiable Items Processing System (SNIPS) in the end-to-end testing process, whether as part of the disbursing event or another event.

Concur.

We have included SNIPS in the Military Pay End-to-End Test Plan. DFAS Indianapolis Center and DFAS Denver Center have agreed to execute an integrated test scenario, entitled Military Pay (Army Payroll Check), which includes receipt of a check payment file from the Military Pay system (DJMS) and issuance of a check and report data

Estimated test completion date: September 30, 1999

2. **Recommendation #2:** Initiate alternative measures to mitigate the risks of disbursing systems not being able to successfully process data after the year 2000. Such alternative measures may include, for example, performing supplementary end-to-end tests of the event, using code scanners, or expanding event contingency plans.

Concur.

The disbursing contingency plan is in place and has been successfully tested.

DFAS will do code scanning of its systems with the Joint Interoperability Technology Command and the Systems Support Group at Gunter Air Force Base. Code scanning will be accomplished on all disbursing systems, to include Standard Finance System-Redesign (SRD-1), Automated Disbursing System (ADS), Standard Negotiable Instrument Processing System (SNIPS) and Integrated Payment and Collection System (IPC).

Estimated completion date to code scan all four systems: October 30, 1999

Audit Team Members

The Finance and Accounting Directorate, Office of the Assistant Inspector General for Auditing, DoD, prepared this report.

F. Jay Lane
Salvatore D. Guli
Kimberley A. Caprio
Dennis M. Conway
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INTERNET DOCUMENT INFORMATION FORM

A . Report Title: Defense Disbursing Year 2000 End-To-End Testing

B. DATE Report Downloaded From the Internet: 02/10/99

C. Report's Point of Contact: (Name, Organization, Address, Office Symbol, & Ph #): **OAIG-AUD (ATTN: AFTS Audit Suggestions)**
Inspector General, Department of Defense
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D. Currently Applicable Classification Level: Unclassified

E. Distribution Statement A: Approved for Public Release

F. The foregoing information was compiled and provided by:
DTIC-OCA, Initials: __VM__ **Preparation Date 02/10/99**

The foregoing information should exactly correspond to the Title, Report Number, and the Date on the accompanying report document. If there are mismatches, or other questions, contact the above OCA Representative for resolution.